

**GOVERNMENT OF INDIA
STEEL
LOK SABHA**

UNSTARRED QUESTION NO:220

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RAW MATERIAL FOR STEEL

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Will the Minister of STEEL be pleased to state:

- (a) what are the methods adopted by various public/private sector Steel Plants for production of steel;
- (b) the approximate requirement of iron ore for production of one tonne of steel by each of the methods;
- (c) whether any latest method is proposed to be followed by any of the new Steel Plants coming up in Orissa;
- (d) if so, the details thereof;
- (e) whether supply of raw materials for production of steel is lower than its demand; and
- (f) if so, the details thereof alongwith the remedial steps taken/ proposed in this regard?

Answer

MINISTER OF CHEMICALS & FERTILIZERS AND MINISTER OF STEEL (SHRI RAM VILAS PASWAN)

(a) The following methods are adopted by various public/private sector steel plants for production of steel:

- (i) Coke-oven, sinter plant-Blast furnace-Basic Oxygen furnace- Continuous casting
- (ii) Direct reduced Iron-Electric Arc furnace/Induction furnace-continuous casting
- (iii) Direct reduced Iron and/or Blast furnace-Electric Arc furnace-Continuous casting
- (iv) Pellet-corex furnace-Basic Oxygen furnace- Continuous casting
- (v) Electric Arc furnace
- (vi) Induction furnace
- (vii) Direct reduced Iron/Electric Arc furnace
- (viii) Direct reduced Iron/Induction furnace
- (ix) Blast furnace/Energy Optimising furnace- Continuous Casting

(b) The approximate iron ore requirement to produce 1 tonne of hot metal through the above processes is about 1.65 tonnes.

(c) POSCO is reportedly considering adopting the FINEX Iron Making Process in their Orissa project. This process can use cheaper iron ore fines and low ash non coking coal as feed stock.

(d) In the FINEX process, the iron ore fines are passed through a series of four circulating Fluidised Bed Reactors into which reducing gas of carbon monoxide from Melter Gasifier is passed which reduces the iron ore fines into Direct Reduced Iron (DRI) which is taken to a Hot Briquette Plant to be converted into Hot Briquetted Iron (HBI). Non coking coal is briquetted and both briquetted coal and HBI is fed into the Melter Gasifier in which iron oxides in HBI are further reduced and molten iron and slag are taken out through different tap holes. Non-coking coal is oxidized as carbon monoxide in the Melter Gasifier in which pure oxygen is injected at a higher pressure and is passed on to Fluidised Bed Reactors to reduce iron oxides to DRI which is then converted into steel.

(e)&(f): The major raw materials required for production of steel are iron ore, coking coal, non-coking coal and flux materials like limestone etc.

Iron Ore - There is no shortage of Iron Ore in the country.

Coking Coal - There is shortage of coking coal in the country and majority of the requirement is imported.

Non-coking coal - There is a shortage of low ash non-coking coal in the country, hence this is also imported.

Steel Melting Scrap - There is a shortage of this ingredient as well.

Remedial steps taken/proposed:

- (i) Since sponge iron is a partial substitute for steel melting scrap, the production of sponge iron is being encouraged.
- (ii) Captive coal blocks are being allocated to the steel producers to meet their coal requirements.
- (iii) Customs duty on coking coal and metallurgical coke has been substantially reduced by the Government.
- (iv) The individual companies arrange for tie-ups of raw materials. As part of their business strategy some of them are exploring possibility of getting assured supply of coking coal through acquiring coking coal mines abroad or participation in the development of these mines through the equity/ joint venture route.